REMARKS

The following remarks are made in response to the Office Action mailed June 24, 2005. Claims 1, 2-5, 1, 15-19, and 21-22 were rejected. Claims 6-10, 12-14, and 20 were objected to. Claim 23 was allowed. With this Response, claims 6, 12, and 20 have been amended. Claims 1-23 remain pending in the application and are presented for reconsideration and allowance.

Specification

The Abstract was objected to for a minor informality. With this Response, the Abstract has been amended as directed by the Examiner.

In light of the above, Applicant respectfully requests that the objection to the Abstract be withdrawn.

Claim Rejections under 35 U.S.C. § 102

Claims 1, 2, 4-5, 11, 15-17, 19, 31, and 22 were rejected under 35 U.S.C. § 102(b) as being anticipated by Lawrence U.S. Patent Publication No. 2003/0056057 ("Lawrence"). Applicant respectfully submits that independent claims 1, 11, and 19 and the claims depending therefrom are not anticipated by Lawrence.

Independent claim 1 recites a multi-chip package including a memory device and a logic device. The memory device receives a clock signal having a frequency. The memory device operates at the clock signal frequency and includes a temperature sensor providing a temperature signal representative of a temperature of the memory device. The logic device provides the clock signal, receives the temperature signal, and adjusts the clock signal frequency based on the temperature signal.

Lawrence does not anticipate the present invention as recited by independent claim 1. Lawrence discloses a system 100 including a processor 102, a memory 104, and a temperature sensor 106, wherein memory 104 comprises a memory, such as a synchronous dynamic random access memory (page 1, paragraphs 13-14), which requires periodic refresh operations to maintain the validity of data stored therein (page 1, paragraphs 3-4 and 14). The term "refresh frequency" refers to the frequency at which the refresh operations must be performed to maintain

the validity of the stored data. According to Lawrence, processor 102 receives a sensed temperature of memory 104 from temperature sensor 106 and adjusts the refresh frequency based on the sensed temperature to reduce the power consumption of memory 104 and thereby increase battery life of portable device of which system 100 is a part.

In light of the above, Lawrence does not teach or suggest a system including a logic device that adjusts a clock signal frequency at which a memory device operates based on a temperature signal representative of a temperature of the memory device. In contrast, Lawrence discloses a system and method for adjusting a refresh frequency of a memory (Figure 1; page 1, paragraph 12). As such, Lawrence teaches adjusting how often a refresh operation of a memory device is carried out based on a temperature of the memory device, not adjusting the frequency at which the memory device operates.

Independent claim 11 recites a clock system in a multi-chip package including a memory device. The clock system includes a clock generator providing a clock signal having a frequency to the memory device and a temperature sensor providing a temperature signal representative of a temperature of the memory device, wherein the clock generator adjusts the frequency of the clock signal based on the temperature signal. For the reasons indicated above with respect to independent claim 1, Lawrence fails to disclose the claimed invention as recited by independent claim 11.

Independent claim 19 recites a method of operating a multi-chip package including a memory device, the method including monitoring a temperature of the memory device, and providing a clock signal at a first frequency to the memory device when the temperature of the memory chip is less than a threshold temperature.

Lawrence does not anticipate the present invention as recited by independent claim 19. Lawrence teaches a system 100 including a processor 102, a memory 104, and a temperature sensor 106, wherein memory 104 comprises a memory, such as a synchronous dynamic random access memory (page 1, paragraphs 13-14), which requires periodic refresh operations to maintain the validity of data stored therein (page 1, paragraphs 3-4 and 14). Processor 102 adjusts a frequency of a refresh operation of memory 104 based on a temperature of memory 104 as provided by temperature sensor 106. Lawrence does not teach or suggest providing a clock

signal at a first frequency to the memory device with the temperature of the memory device is less than threshold level.

In view of the above, Lawrence does not teach or suggest the claimed invention as recited by independent claims 1, 11, and 19. Furthermore, dependent claims 2, 4, and 5 further define patentably distinct independent claim 1, dependent claims 15-17 further define patentably distinct independent claim 11, and dependent claims 21 and 22 further define patentably distinct independent claim 19.

As such, Applicant request withdrawal of the rejections of claims 1, 2, 4-5, 11, 15-17, 19, and 21-22 under 35 U.S.C. § 102(b) be withdrawn.

Claim Rejections under 35 U.S.C. § 103

Claims 3 and 18 were rejected under 35 U.S.C. § 103(a) as being anticipated by Lawrence in view of Ooishi et al. U.S. Patent Publication No. 6,731,535 ("Ooishi").

Claim 3 depends directly from independent claim 1, and claim 18 depends directly from independent claim 11. For the reasons stated above, Applicant believes independent claims 1 and 11 to be in allowable form. Accordingly, Applicant requests that the rejections of dependent claims 3 and 18 under 35 U.S.C. § 103(a) be withdrawn.

Allowable Subject Matter

Independent claim 23 was allowed.

The Examiner objected to claims 6-10, 12-14, and 20 for being dependent upon a rejected base claim, but as being allowable if rewritten in independent form including all limitations of the base claim and any intervening claims.

Applicant agrees with the Examiner's conclusions regarding patentability without necessarily agreeing with or acquiescing in the Examiner's reasoning. In particular, Applicant believes that the claims are allowable because prior art fails to teach, anticipate or render obvious the invention as claimed, independently of how the invention is paraphrased.

Accordingly, Applicant has rewritten claims 6, 12, and 20 in independent form. Allowance of these claims and the claims dependent therefrom is respectfully requested.

CONCLUSION

In view of the above, Applicant respectfully submits that pending claims 1-23 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 1-34 is respectfully requested.

No fees are required under 37 C.F.R. 1.16(b)(c). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 50-0471.

The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

Respectfully submitted,

Jong-Hoon Oh,

By his attorneys,

DICKE, BILLIG & CZAJA, PLLC
Fifth Street Towers, Suite 2250
100 South Fifth Street
Minneapolis, MN 55402
Telephone: (612) 573-2002
Facsimile: (612) 573-2005

Date: September 23, 2005
SED:jan

Steven E. Dicke
Reg. No. 38,431

CERTIFICATE UNDER 37 C.F.R. 1.8: The undersigned hereby certifies that this paper or papers, as described herein, are being facsimile transmitted to the United States Patent and Trademark Office, Fax No. (571) 273-8300 on this 23 day of September, 2005.

By Steven E. Dicke
Name: Steven E. Dicke